

Amendments to the Claims:

1. (Currently Amended) Apparatus for the measurement of the total internal resistance of fuel cells and fuel ~~cells~~ cell stacks comprising:

an electronic load system ~~which comprises having~~ an input unit generating an input pulse, a driver for the control of the input pulse, a MOSFET module ~~comprising~~ having at least one MOSFET device for ~~the generation of a short circuit in a fuel cell receiving a signal from the driver at a gate module of the MOSFET device, and a bank of selectable resistors; and~~

~~and a measuring circuit which comprises having a shunt for converting the fuel cell voltage into a current signal generating a resistance upon receiving a current signal, a differential amplifiers amplifier for the current signal, and a differential amplifier for the a voltage signal signals, and a data acquisition system which receives the voltage signal and the current signals signal obtained by the differential amplifiers.~~

2. (Currently Amended) Apparatus according to claim 1, ~~characterized in that said wherein~~ the MOSFET module produces short circuit pulses ~~ranging between of 0.1 to and~~ 100 msec.

3. (Currently Amended) Apparatus according to claim 1, ~~or 2 characterized in that wherein~~ the bank of selectable resistors is connected in series with the fuel cell.

4. (Currently Amended) Apparatus according to the ~~claims~~ claim 1, ~~to 3, characterized in that further comprising a plurality of active differential probes are included in coupled to~~ all the signal connections for the reduction of ambient noises.

5. (Currently Amended) Apparatus according to the ~~claims~~ claim 1, ~~wherein to 4, characterized in that~~ all connections and resistors are low inductive.

6. (Currently Amended) Apparatus according to the ~~claims~~ claim 1, ~~wherein to 5,~~
~~characterized in that~~ the load elements are connected to a safety system that limits current when local temperatures become too high.

7. (Currently Amended) A Method method for the measurement of the total internal resistance of fuel cells and fuel cells cell stacks, the method comprising ~~the following steps:~~

generating an input pulse;
causing a short circuit in the fuel cell by means of a MOSFET module;
taking the potential measurement of the fuel cell for resistance ~~calculation~~ when the open circuit ~~gets closed~~ of the fuel cell is closed;
obtaining the fuel cell current signal by means of a shunt; and
sending the a voltage signal and the current signals signal to an acquisition system.

8. (Currently Amended) The Method method according to claim 7, ~~characterized in that~~ wherein the reactance effect ~~on~~ in response to the short circuit in the fuel cell is enhanced by a bank of resistors.

9. (Currently Amended) The Method method according to claim 7, wherein or 8, ~~characterized in that~~ the MOSFET module remains active ~~for even by the application of the a~~ voltage corresponding to ~~of~~ a single fuel cell.

10. (Currently Amended) The Method method according to ~~the claims~~ claim 7, wherein to 9, ~~characterized in that~~ the noise effects on measurement errors are reduced by means of the high current obtained.

11. (Currently Amended) The Method method according to the claims claim 7,
wherein to 10, characterized in that current pulse trains are generated with an ON/OFF ratio and
an operating frequency settable configurable by an operator.